B. Fabrication

General Provisions 101 through 150.

C. Acceptance

Test as follows:

Test	Method
Gradation	AASHTO T 11 and AASHTO T 27
Maximum dry density	GDT 7 or GDT 67
Volume change	GDT 6

D. Materials Warranty

General Provisions 101 through 150.

Section 814—Soil Base Materials

814.1 General Description

This section includes the requirements for soil base materials, including topsoil or sand-clay, soil-cement, sand for bituminous stabilization, and chert.

814.1.01 Related References

A. Standard Specifications

Section 301 – Soil-Cement Construction

Section 800–Coarse Aggregate

Section 810–Roadway Materials

Section 831–Admixtures

B. Referenced Documents

AASHTO T 89

AASHTO T 90

GDT 4

GDT 6

GDT 7

GDT 65

GDT 67

814.2 Materials

814.2.01 Topsoil or Sand-Clay

A. Requirements

1. Use topsoil or sand-clay that is a natural or artificial mixture of clay or soil binder with sand or other aggregate.
   - Do not use a mixture that contains substances detrimental to the material.
   - Obtain the materials from sources approved by the Engineer.
   - Ensure that the aggregate retained on No. 10 (2 mm) sieve (coarse aggregate) is of hard, durable particles.
2. Sand and Binder
   Use hard, sharp, durable, siliceous particles. Use binder made from quality clay.

3. Oversize

   Remove particles with diameters greater than 2 in (50 mm) before depositing the topsoil or sand-clay on the road.

   Remove particles with screens or grizzlies, or by hand if few oversized pieces exist. You may crush the oversized pieces and use them.

4. Topsoil

   Use a topsoil that is a natural, generally pebbly material occurring in shallow surface deposits on usually elevated areas.

5. Natural Sand-Clay

   Use a natural sand-clay that is a mixture of natural material, largely sand and clay in proper proportions, occurring in deposits of considerable depth.

6. Artificial Sand-Clay

   Use an artificial sand-clay that is largely a mixture of artificial sand and clay. You may make the mixture by combining clay or soil binder and sand or aggregate in the proper proportions.

7. Topsoil and Sand-Clay

   Use topsoil and sand- clay with the following properties:

Sieve Size	Amount
Passing 2 in (50 mm)	100% by weight
Passing 1-1/2 in (37.5 mm)	80-100% by weight
Passing No. 40 (425 µm)	Liquid Limit (LL) of 25 or less Plasticity Index (PI) of 9 or less

8. Ensure that material passing the No. 10 (2 mm) sieve meets the following requirements:

Sieve Size	Percent Passing by Weight
Passing No. 10 (2 mm) sieve	100
Passing No. 60 (250 µm) sieve	15-85
Passing No. 200 (75 µm) sieve	9-35
Clay	9-25
Volume change, max. percent	12
Maximum density, lb/ft³ (kg/m³)	110+ (1760+)

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

The Department or Producer will test as follows:

Test	Method
Soil gradation	GDT 4
Volume change	GDT 6
Maximum density	GDT 7 or GDT 67
Liquid Limit	AASHTO T 89
Plastic Limit and Plasticity Index	AASHTO T 90

D. Materials Warranty

General Provisions 101 through 150.

814.2.02 Soil-Cement Material

A. Requirements

1. Ensure that the material for soil-cement base will:
   a. Meet the requirements of Subsection 810.2.01 for Classes IA1, IA2, IA3, or IIB1 with the following modifications:

Clay content	4 to 25%
Volume change	18% maximum
Liquid Limit	25% maximum
Plasticity Index	10% maximum
Maximum dry density	95 lb/ft³ (1520 kg/m³) minimum

   b. Be friable and not contain large amounts of heavy or plastic clay lumps, organic material, roots, or other substances that would interfere with how the Portland cement sets, plant production, or the finished surface of the base and meet the requirements of Subsection 301.3.05.A.2, "Pulverization" or Subsection 301.3.05.B.1, "Soil".
   c. Produce a laboratory unconfined compressive strength of at least 450 psi (3.1 MPa). To make the sample, mix in a maximum of 8 percent Type I Portland cement, moist-cure for 7 days, and test with GDT 65.
2. Analyze the soil-cement design and create a Job Mix Formula for each Project where soil-cement base or subbase is specified. Have the Job Mix Formula approved by the Engineer before starting base or subbase construction.
3. You may use fly ash or slag that meets the requirements of Subsection 831.2.03 as admixtures for poorly reacting soils when the blend of soil and fly ash, or slag, meets the design requirements in this Subsection.

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

Test as follows:

Test	Method
Soil-Cement Design	GDT 65

D. Materials Warranty

General Provisions 101 through 150.

814.2.03 Sand for Bituminous Stabilization

A. Requirements

1. Submit the bituminous stabilization sand materials to the laboratory in advance. If the laboratory approves the material, use it in constructing the sand- bituminous base course.
2. Use hard, durable particles without organic impurities such as roots or trash that may prevent the bituminous material from bonding with the individual particles.
3. Grade the material as follows:

Size	Percent Passing by Weight
Passing 1 in (25 mm) sieve	100
Passing No. 10 (2.00 mm) sieve	80-100
Passing No. 200 (75 µm) sieve	0-25
Clay	0-16

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

Test as follows:

Test	Method
Soil gradation	GDT 4

D. Materials Warranty

General Provisions 101 through 150.

814.2.04 Chert

A. Requirements

Use materials that are natural mixtures of binder and chert rock with the following characteristics:

- Ensure that the aggregate retained on the No. 10 (2 mm) sieve (coarse aggregate) is a hard, durable chert rock meeting requirements for Class A or B coarse aggregate (see Subsection 800.2.01).

  Use aggregate sizes in the final mix that can be properly placed, compacted, and finished.
- Ensure that the portion of material passing the No. 10 (2 mm) sieve is sand and clay or another satisfactory bonding material.

1. Gradation

   Grade the material as follows:

Size	Percent by Weight
Passing 1-1/2 in (37.5 mm) sieve	80-100
Passing No. 10 (2 mm) sieve	30-60
Material Passing No. 10 (2 mm) Sieve	
Passing No. 10 (2 mm) sieve	100
Passing No. 60 (250 µm) sieve	20-85
Passing No. 200 (75 µm) sieve (silt less clay)	5-25
Clay	15-50

   Ensure that the material passing the No. 40 (425 µm) sieve has a Liquid Limit (LL) of 35 or less and a Plasticity Index (PI) of 10 or less.

2. Stockpiles

   In all cases, stockpile the end product so that the material will be blended before any of it is loaded and delivered to the job.

   a. Make a stockpile big enough to uniformly blend the workable strata in the pit.
   b. The Engineer will determine the minimum volume of the stockpile. The Engineer will also be the sole authority as to the quality and workability of the various strata occurring in the pit.
   c. Maintain the minimum volume of the stockpile until the suitable material in the pit has all been stockpiled or until the material remaining in the stockpile is enough to complete the operation, as governed by haul limitations.

3. Equipment for Delivery

   Use equipment that will mix the material again while the material is being loaded for delivery.

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

Test as follows:

Test	Method
Soil gradation	GDT 4
Liquid Limit	AASHTO T 89
Plastic Limit and Plastic Index	AASHTO T 90

D. Materials Warranty

General Provisions 101 through 150.

Section 815—Graded Aggregate

815.1 General Description

This section includes the requirements for material to be used for base, subbase, or shoulder course material, and includes graded aggregate, unconsolidated limerock base, and crushed concrete base.

815.1.01 Related References

A. Standard Specifications

Section 800—Coarse Aggregate

B. Referenced Documents

AASHTO T 27

ASTM C 295

ASTM D 3042

FL DOT Method FM5-515

SOP–1

GDT 63

815.2 Materials

815.2.01 Graded Aggregate

A. Requirements

1. Type

   Use graded aggregate base, subbase, or shoulder course material of uniform quality.

   a. Obtain the graded aggregate from an approved source or deposit that will yield a satisfactory mixture meeting all requirements of this Specification.

   b. Use material that is crushed or processed as a part of the mining operations, or, mix two grades of material so that when combined in the central mix plant, the mixture meets the specifications.

2. Retained on the No. 10 (2 mm) sieve

   Ensure that the material retained on the No. 10 (2 mm) sieve is Class A or B aggregate that meets the requirements of Section 800.

3. Passing the No. 10 (2 mm) sieve

   Ensure that any material passing the No. 10 (2 mm) sieve is relatively free of detrimental substances, such as soil overburden, decomposed rock, and/or swelling silts.

4. Stabilized Mixtures

   Ensure that mixtures to be stabilized react satisfactorily when mixed with Portland cement. The Engineer will specify the percentage of Portland cement to use.